Amendments to the Specification:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Please replace the paragraph beginning on page 2, line 3 with the following paragraph, shown here in redline:

At present, various techniques allow thermal control of chemical or biochemical reagents. In particular, from the end of the 1980s, miniaturized devices were developed, and thus had a reduced thermal mass, which could reduce the times necessary to complete the DNA amplification process. Recently, monolithic integrated devices of semiconductor material have been proposed, able to process small fluid quantities with a controlled reaction, and at a low cost (see, for example, U.S. Patent Applications 09/779,980, filed on February 8, 2001; 09/874,382 filed on June 4, 2001; and 09/965,128, now issued U.S. patent No. 6,710,311 ~~filed September 26, 2001~~; all assigned to STMicroelectronics, S.r.l. and incorporated herein by reference).

Please replace the paragraph beginning on page 7, line 7 with the following paragraph, shown here in redline:

A lower side or surface 28 of the substrate 12 has a portion thereof below the channel region 20 (at the back of the wafer 11) etched away or otherwise removed to reduce the thickness of the substrate in this area and to form a recess 29 in the substrate. The recess 29 defines at least in part ~~forms~~ a chamber 30 and serves as the object to be heated by the heat 22 generated by the channel region 20. The chamber 30 may be sized and shaped to receive a substance 32 to which the heat 22 transmitted into the chamber 30 is transferred. The chamber 30 is positioned close to the channel region 20 to receive the heat 22 generated by the channel resistance R_{DS} when the channel region is conducting electric current. The substrate 12 is removed when forming the chamber 30 so as to leave only a thin wall portion 34 thereof remaining below the channel region 20 in order to have the heat source (*i.e.*, the channel region) close to the substance 32 to be heated.

Please replace the paragraph beginning on page 11, line 1 with the following paragraph, shown here in redline:

A third alternative embodiment of the heater 10 is shown in Figure 4. The heater 10 of Figure 4 has a different construction than the heaters of Figures 1-3 in that the MOSFET is made on a SOI (silicon on insulator) wafer 11′ with the substrate 12 (such as silicon) having its lower side 28 engaging an oxide layer 50. The heat 22 generated by the channel region 20 is transmitted through the oxide layer 50 to the chamber 30 so the oxide layer 50 is selected with thermal properties sufficient to transfer the desired amount of heat to the chamber. The structure of Figure 4 can be obtained by using two separate wafers, one for the heating device and one for the chamber 30. The substrate for the chamber 30 can be any acceptable material for the chamber, including silicon, an organic polymer, sapphire, or any other suitable material. A layer 50 of an insulator is grown thereon that the back side of the wafer 12 is removed to a desired level and the wafer 11' is connected to the substrate 12. There are many acceptable techniques for doing this, one of which is described in ~~pending~~ application ~~854063.663~~No. 10/037,484, now issued U.S. patent No. 6,689,627, incorporated herein by reference.

Please replace the paragraph beginning on page 13, line 23 with the following paragraph, shown here in redline:

An eighth alternative embodiment of the heater 10 is shown in Figure 9. The heater 10 of Figure 9 has the same basic construction as the heater of Figure 8 and has the chamber 30 ~~is~~ located on the front of the wafer 11′. However, instead of the substrate 12 and the body 52 extending laterally and providing a window in the overlay dielectric layer 66, in this eighth alternative embodiment the chamber 30 formed by the wall portion 72 of the body 70 has the inward opening 74 positioned immediately over the MOSFET. Further, the inward opening 74 has sufficiently large lateral sized to span the source and drain regions 14 and 16, the gate electrode 26 and the channel region 20, and terminates above the trench 60 formed in the substrate 12 which is located laterally outward of and extends fully about the source and drain regions 14 and 16 and channel region 20. In such manner, the heat 22 generated by the channel region 20 is thermally blocked by the oxide layer 50 and the trench 60, and thus contained within the wall portion 34 of the substrate12 inward of the oxide layer 50 and the trench 60, and transmitted through the gate electrode 26 and the overlay dielectric layer 66 around the gate electrode. The heat 22 is then passed through the inward opening 74 and into the chamber 30.

In this embodiment, the overlay dielectric layer 66 is selected with thermal properties which allow sufficient amount of the heat 22 generated by the channel region 20 to be transferred through the overlay dielectric layer as needed to supply the desired heat to the chamber 30 and to whatever substance may be therein.